

REMARKS

Claims 1-65 are currently pending. Claims 1 and 28 have been amended to replace an abbreviation with its corresponding text and to correct a typographical error, respectively. These changes are not intended to narrow the scope of the claims. New dependent claims 29-65 have been added herein. The allowance of claims 11-21 and 27, and the indication of allowable subject matter in claims 3-10, are acknowledged with appreciation. Reconsideration is respectfully requested.

Amendments to the Specification

The Office Action contains an objection to the disclosure because information regarding related application data is missing. The specification has been amended to address this objection, and withdrawal of the same is respectfully requested. In addition, the specification has been amended in various instances to correct typographical errors and/or for readability. In addition, the specification has been amended at paragraph 0025 to make explicit what was already implicit and readily understood by those of ordinary skill in the art, namely, that modulations of carrier waves provide information content.

Art Rejections

The Office Action contains a rejection of claims 1, 2 and 26 under 35 U.S.C. §102(b) as allegedly being anticipated by the *Chen et al.* patent (U.S. Patent No. 5,949,919). This rejection is respectfully traversed.

Independent claim 1 recites a method of processing image data, the method comprising the steps of acquiring a frame of image data, and compressing a

dynamic range of the frame of image data using a dynamic range compression algorithm that utilizes down-sampling, median filtering and up-sampling.

Contrary to the Office's suggestion, the *Chen et al.* patent does not disclose a method of processing image data as recited in claim 1. The *Chen et al.* is directed to a video compression encoder process for compressing digital video data of video sequences (col.2, line 65 - col. 3, line 2), and discloses that such compression is desirable because the amount of raw digital information in video sequences is large, and storing and transmitting such amounts of video information is infeasible with conventional computer equipment (col. 1, lines 35-38). The section of the *Chen et al.* patent relied upon by the Office in rejecting claims 1, 2 and 26 is directed to an encoder method that employs a Laplacian pyramid encoder (col. 25, lines 36-38).

This encoder method, reflected in Figure 19a of the *Chen et al.* patent, utilizes a first decimation filter 502 that employs a median filter, more specifically, a 3 x 3 non-separable median filter (col. 25, lines 50-58). Pixels are filtered with the decimation filter 502 (median filter) and are then down sampled with a first 2 x 2 down sampling filter 514, followed by filtering with a 2 x 2 up sampling filter 516 (col. 25, lines 59-64, and col. 26, lines 11-23). As with conventional video compression, the video compression disclosed in the *Chen et al.* patent is ultimately reversed by decompression to recover an initial image (e.g., col. 26, line 65 - col. 27, line 30).

As such, the *Chen et al.* patent is understood to be directed to compression and decompression of video data to provide for economical storage and transmission. Applicants see no indication in the *Chen et al.* of using the methods disclosed therein to compress a dynamic range of image data as recited in claim 1. In other words, it is not the dynamic range of image data that is compressed

according to the *Chen et al.* disclosure, but rather, it is the file size of the image data that is compressed. In compression/decompression of the type disclosed in the *Chen et al.* patent, as with conventional video compression/decompression, no compression of the dynamic range of the recovered image is desired; rather, recovering the original image is desired. Accordingly, claim 1 is not anticipated by the *Chen et al.* patent for at least these reasons, and withdrawal of the rejection and allowance of claim 1 are respectfully requested.

Claim 2 is allowable at least by virtue of dependency from claim 1. In addition, with regard to claim 2, the Office alleges that the *Chen et al.* patent discloses normalizing the frame of image data prior to the step of compressing the dynamic range, and refers to reference numeral 502 in Figure 19a for alleged support. Applicants respectfully submit that the rejection of claim 2 is inconsistent with the rejection of claim 1 inasmuch as the Office evidently relies on the decimation filter 502 as allegedly corresponding to the claimed median filter (see also col. 25, lines 51-58 which point out that decimation filter 502 preferably employs a median filter). Accordingly, it is not understood how feature 502 of the *Chen et al.* disclosure can correspond to both the claimed median filter and be provided for normalizing image data prior to a dynamic range compression algorithm that utilizes such median filter. Accordingly, claim 2 is additionally allowable for at least this reason.

In addition, new dependent claim 60, which depends from claim 1, has been added herein to recite that the median filtering comprises applying a median filter to down-sampled image data, the median filter having a kernel of $N=L+M$ elements, wherein L elements are active elements and M elements are non-active elements, the active elements being arranged in a predetermined pattern. The *Chen et al.*

patent does not disclose this subject matter. Further, new dependent claim 63m which depends from claim 1, has been added to recite that the dynamic range compression algorithm utilizes down-sampling, median filtering, and up-sampling in that order. In contrast, the *Chen et al.* patent discloses the order of median filtering, down-sampling, and up-sampling as noted above. Accordingly, new claims 60 and 63 are allowable for at least these reasons, and also by virtue of dependency.

Claim 26 recites an apparatus for processing image data comprising an image data source, and a processor unit coupled to the image-data source. The processor unit is configured to compress a dynamic range of a frame of image data using a low-frequency-suppression algorithm that utilizes down-sampling, median filtering, and up-sampling. Accordingly, claim 26 is distinguishable over the *Chen et al.* patent at least for reasons similar to those set forth above with regard to claim 1.

In addition, new dependent claims 62 and 65, which depend from claim 26, recite additional distinguishable subject matter like that recited in new claims 60 and 63. Accordingly, new claims 62 and 65 are allowable for at least these reasons, and also by virtue of dependency.

The Office Action also includes a rejection of claims 22, 23 and 28 under 35 U.S.C. §102(e) as allegedly being anticipated by the *Gonsalves et al.* (U.S. Patent No. 6,269,195). This rejection is respectfully traversed.

Claim 22 recites a method of approximating a Gaussian-blur filter, comprising applying a first box filter having a first kernel size to a group of pixels of a frame of image data. The method also comprises applying a second box filter having a second kernel size to the group of pixels, wherein first kernel coefficients for the first

box filter and second kernel coefficients for the second box filter are configured to approximate a resultant Gaussian function.

Applicants respectfully submit that the *Gonsalves et al.* does not disclose a method of approximating a Gaussian-blur filter as recited in claim 22. The Office relies upon steps 84 and 86 illustrated in Figure 6 of the *Gonsalves et al.* patent and column 2, lines 9-18 for allegedly disclosing the claim subject matter. However, column 2, lines 9-18 simply state that a Gaussian filter may be implemented as a two pass FIR filter - one pass for a horizontal direction, and one pass for a vertical direction. Moreover, contrary to the Office's suggestion, the *Gonsalves et al.* patent does not disclose that the filters used in steps 84 and 86 of Figure 6 approximate a Gaussian-blur filter. Applicants note that column 10, lines 35-44 of the *Gonsalves et al.* patent states that results of the process of Figure 6 are difficult to distinguish from composite images generated using a Gaussian filter. However, this is not the same as stating that the filters utilized in Figure 6 are configured to approximate a Gaussian filter, such as recited in claim 22. Claim 22 is accordingly not anticipated for at least this reason. Claim 23 is allowable at least by virtue of dependency.

The Office Action also includes a rejection of claims 24 and 25 under 35 U.S.C. §103(a) as allegedly being unpatentable over the *Gonsalves et al.* patent. This rejection is respectfully traversed at least because claims 24 and 25 are allowable at least by virtue of dependency. Withdrawal of the rejection and allowance of claims 24 and 25 are respectfully requested.

Claims 3-10

The Office Action also includes an objection to claims 3-10 as being dependent upon a rejected base claim, but otherwise allowable. It is believed that these claims are allowable in their present form inasmuch as claims 1 and 2 are believed to be allowable at least for reasons set forth above. Withdrawal of the objection is respectfully requested.

New Dependent Claims 29-65

New dependent claims 29-65 have been added herein to round out the scope of protection being sought. These claims are allowable at least by virtue of dependency, and also for reasons set forth previously herein. Allowance of the same is respectfully requested.


Conclusion

In light of the foregoing, withdrawal of the objections and rejections of record are respectfully requested so that the present application may pass to issuance. Should there be any questions in connection with this application, the Office is invited to contact the undersigned at the number below.

Respectfully submitted,

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